

# BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An Open Forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

## TREATMENT OF PNEUMONIA

D. SCHUYLER PULFORD, WOODLAND.—Pneumonia should be considered as a general systemic disease with the most outspoken local manifestations in the lungs. The cardiovascular, gastrointestinal and nervous systems bear considerable brunt of the disease through toxins brought to them via the circulation. Until antitoxins outnumber toxins the patient is very sick and uncomfortable. When this ratio is reversed, well-being and health is regained. This is a specific change. Recovery takes place in many cases without any treatment. Treatment, however, may shorten the disease and add to the comfort of the patient. It may be conveniently considered under the following headings:

1. Drug therapy best summed up as symptomatic and supportive.

2. Physical agents such as fresh air, oxygen, diathermy, external applications, and intravenous therapy.

3. Specific treatment, serums, vaccines, antibody solutions.

4. Complications.

- (1) The chief symptoms and signs which may require drug therapy are: fever, cough, pain, abdominal distention, restlessness or delirium, circulatory failure.

Fever should be controlled, not abolished. Hydrotherapy, in the form of frequent sponges, should be used to the exclusion of antipyretics, but care should be exercised not to tire the patient by too frequent handling and turning. Aspirin, however, in small doses is beneficial as a preliminary to spongeing, and in children is just as relaxing as codein.

Cough, pain, and restlessness should be controlled, if necessary, by drugs. Steam inhalations bearing compound tincture of benzoin and menthol and eucalyptus are useful.

Abdominal distention is often an early and troublesome symptom, requiring frequent enemas, hot abdominal stupes, and a rectal tube. If persistent, one-half cubic centimeter of pituitrin one-half hour before a gas enema should be tried. No one can predict which patient will or will not respond to pituitrin.

The chief system needing support is the circulatory apparatus.

It seems to be the consensus of opinion that prophylactic use of digitalis is contraindicated in pneumonia. Miles and Wyckoff during 1928 and 1929 in the three medical divisions of Columbia, Cornell, and Bellevue hospitals, in a large series of cases in New York City, adequately controlled and studied by a group of workers, came to the conclusion that "results do not justify continuing routine administration of digitalis to

patients suffering with lobar pneumonia. With uniform general care and nursing and carefully controlled as to age, sex and dosage, all types except Type II gave a higher death rate with digitalis than without it.

Granting the truth of the above as to routine administration of digitalis, most clinicians select certain cases as requiring this drug. I believe that intravenous saline and glucose therapy should be tried before digitalis even in these cases as with the giving of from 1000 to 3000 cubic centimeters of normal saline or five per cent glucose in saline over a period of six to twelve hours and transfusions of 500 cubic centimeters of blood an impending "cardiac failure" is averted, indicating that perhaps we are really dealing with a vasomotor failure due to paralysis of the constrictor fibers from circulating toxins and not with a failing myocardium. The patients die from "medical shock," not from circulatory failure.

Caffein sodium benzoate in two to seven grain doses may be useful in combination with the above treatment.

## PHYSICAL AGENTS

General measures are as important as drugs in controlling untoward symptoms and supporting the continued function of the several systems in danger. Absolute rest and fresh air if possible, with quiet and special nursing, with no visitors to be constantly engaging the patient's attention and spending his energy, are important.

*Oxygen Treatment.*—The oxygen treatment of pneumonia deserves serious consideration in all patients who tend to become cyanotic or in which edema of the lungs seems imminent. It has been shown that to prevent anoxemia 20 per cent more oxygen is required for every degree of fever over 102 degrees. In postoperative pneumonia, which in many instances is started by atelectasis, or even massive collapse, inhalation of 95 per cent oxygen with 5 per cent carbon dioxide is beneficial; and of course such inhalations should be given each patient before leaving the operative table, to prevent atelectasis and collapse. Braasch, Binger, and Roth have done much to develop apparatus with which to give oxygen efficiently. Concentrations from 40 to 60 per cent by the tent method is most practical. Failures in the past to obtain good results with oxygen treatment have been due in most part to poor apparatus and inefficient methods. Doctor Robertson, chief of the postmortem section of pathology of the Mayo Clinic, states that, "Since the introduction of the oxygen chamber and tent, I do not see any more terminal bronchopneumonia at postmortem." This statement alone should command the further use of oxygen in pneumonias.

## DIATHERMY

In Doctor Crile's clinic, diathermy is thought to prevent postoperative pneumonias when given during operations and to be of benefit in early cases of pneumonia. It causes a preliminary rise and subsequent fall in general body temperature and the patient perspires, rests, and is often relieved of pain. It is contraindicated in edematous lungs and is reported to be more efficacious the earlier in the disease it is used.

It seems probable that the extreme claims of some of the physiotherapists have done much to delay its acceptance by the general internist, but they in turn would do well to talk with the physiotherapist and doctor who has used it and try it themselves before forming a final opinion.

Diathermy makes mustard plaster therapy unnecessary in the hospital. It should not be discarded by the family physician in the home, where the family as well as the patient demands consideration.

## SERA

A discussion of the rational value of serotherapy and vaccine therapy in pneumonia is based on the belief of specificity of organisms in disease.

In the hands of such men as Cole, Felton, Park, and their co-workers, much has been done to develop experimentally and prove clinically the efficacy of immune serum for Type I pneumococcus.

Early diagnosis and injections of large amounts of serum reduce the mortality rate remarkably in this type of lobar pneumonia. Vaccine therapy is still of questionable value. Although vaccine therapy by Lambert in 1926 cut the mortality in Type I pneumonia from 17 to 8 per cent, it is not generally accepted as of specific value.

## COMPLICATIONS

No discussion of the treatment of pneumonia is complete without honorable mention of complications, for it is the unrecognized purulent effusion which accounts for a high percentage of deaths and deaths which might well be preventable. Empyema, meningitis, pericarditis with or without effusion, and a continued septicemia account for about 50 per cent of all deaths, only half dying of the simple disease itself.

Early exploratory needling of the chest when it is really exploratory and not waiting for outspoken physical signs or undoubted positive x-ray pictures may be life-saving. Early consultation and continued coöperation with the surgeon is important in empyema.

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FLETCHER B. TAYLOR, OAKLAND.—A drunken man lying on the cold ground is liable to contract pneumonia. His drunkenness, like anesthesia, is an independent factor which increases his susceptibility.<sup>1</sup> Cold environment, and particularly a sudden drop in temperature, favors the development of pneumonia.<sup>2</sup> To make the matter still worse, let us suppose that our imaginary subject has jaundice<sup>3</sup> and diabetes, that he is elderly,

that he has a cold on the day of his misfortune,<sup>4</sup> or that he has a failing heart function. Suppose, also, that a policeman tries to rouse him by kicking his ribs.<sup>5</sup> Each one of these premises represents a factor which will predispose him to pneumonia. Yet, he may escape without it, and live to sorrow over the death of a stalwart friend of perfect conduct and excellent health.

As physicians, we may grope a little further into the factors which govern the incidence of pneumonia, the course of the disease, its treatment, and prognosis. We must no longer be content with the gross physical diagnosis and the gross physical care of the patient. It is our early duty to determine the organism at work. Then we may orient the patient and ourselves in an experience which still holds many dangers and uncertainties. From the extensive work of Cecil,<sup>6</sup> we know that the pneumococcus is at work in 95 per cent of cases. The other five per cent includes *Streptococcus hemolyticus*, *Bacillus influenzae*, Friedlander's bacillus (*B. mucosae capsulatus*), *Staphylococcus aureus*, and some others more rarely found. Cecil's statistics give us other valuable working guides. If the patient is young, his pneumonia is probably Type I pneumococcus; if elderly, it is probably Type III. If the patient is a man, Types I and II are more to be expected than Types III or IV. The physician quite properly shrinks from disturbing his patient more than necessary, but, in spite of this reserve, he must proceed from probabilities to certainties. Sputum must be collected as early as possible. If there is no available sputum, a swab of the pharynx after coughing is usually diagnostic. The Sabin mouse test<sup>7</sup> for the type of pneumococcus requires only three or four hours. Type I must be recognized for its importance in treatment, a matter which is discussed in a succeeding section. If Type I pneumococcus is not found, recognition of other types or of other organisms is essential in order to observe and prognose intelligently. Types II and III have a higher mortality than Types I and IV, roughly: 40 per cent as against 30 per cent. *Streptococcus hemolyticus* causes 40 to 60 per cent mortality, and empyema will occur in one out of three cases. Friedlander's bacillus pneumonia is always fatal. *Staphylococcus aureus* pneumonia carries a liability to empyema and to lung abscess. When bacteremia is found, the patient has only 15 per cent chance for recovery. Other predictions may be made. Regardless of organism, the patient has one chance in two of healing by crisis. Patients less than twenty years old have 11 per cent mortality as against 53 per cent for those over sixty years. These and other data are available if we appraise the patient and discover the organism at work.

The concept of "cause" suggests "prevention" and in pneumonia, prevention is to some extent possible. We can encourage proper care of the common cold and can at least urge patients to avoid the other predisposing causes suggested above. We can prevent most instances of atelectasis and massive collapse occurring after surgical operation. We can encourage good health in

nurses caring for pneumonia patients, knowing that the mouths of attendants more often contain pneumococci than do the mouths of the general populace.<sup>6</sup>

To summarize, pneumonia is an illness which usually represents the collusion of several adverse biologic factors all of which focus on a common target, the lung tissue. One factor which may serve as a guide for treatment and for prognosis is the type of organism which predominates. Knowing something of the causes, it is our duty to encourage reasonable preventive measures.

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ROY E. THOMAS, LOS ANGELES.—A discussion of lobar pneumonia can be depended upon nowadays to bring up two moot questions in the management of this disease: First, the use of digitalis, and second, the employment of specific sera.

Regarding digitalis our experience on the pneumonia ward of the Los Angeles General Hospital is of interest. For a period of four and one-half years patients were admitted alternately to the two services into which the ward was divided. All cases of lobar pneumonia on one service, 239 in number, were rapidly digitalized; of these 81 or 33.4 per cent died. On the other service there were 363 cases, none of which received digitalis; of these 68 or 18.7 per cent died. These results are even more striking than the more carefully controlled experiment of Niles and Wyckoff mentioned by Dr. Pulford.

In the face of these statistics it would require considerable temerity to advocate the administration of digitalis to pneumonia patients except in those comparatively rare cases which develop auricular fibrillation or flutter, or the occasional case with a history of previous myocardial failure.

The specific treatment of pneumonia still leaves much to be desired. It is effective only in cases caused by pneumococcus Types I and II, which together comprise only about 50 per cent of all cases. To be of value serum must be used early and

in large amounts. Felton's concentrated serum is probably the best available at the present time. Its use is not entirely without danger. Nevertheless all pneumonia patients should be typed as soon as possible and have early blood cultures as advocated by Dr. Taylor.

Of the greatest importance in the management of the pneumonia case is rest for the patient. All too often he is disturbed by visitors, too frequent chest examinations by the physician, or the ministrations of an over zealous nurse. Particularly tiring is the daily cathartic or enema which the pneumonia patient, whether at home or in the hospital, seldom escapes. For the past year no patient on my service at the Los Angeles General Hospital has been given either cathartic or enema during the critical stage of his illness, whether this lasts three days or nine. When the patient gets well enough to worry about this apparent neglect he is given a mild cathartic or an enema if the bowels do not move spontaneously. Since the adoption of this plan I believe we see fewer cases with troublesome abdominal distention. When this dread symptom does occur it can best be controlled by the liberal use of pituitrin.

Of the serious complications of lobar pneumonia, empyema is, of course, the most frequent. We try to make the diagnosis early, but we are in no hurry to transfer the case to a surgical service. When fluid in the pleural cavity is suspected, an x-ray film is ordered. If this confirms our suspicions, the aspirating needle is used to determine the character of the fluid and to withdraw a sufficient amount to relieve pressure symptoms, if these are present. Nothing more is done until we are quite sure that the acute pneumonic process in the lung has subsided. Then, and only then, is the case turned over to the surgeon for closed drainage or rib resection. Many a life has been lost by hasty surgical interference in empyema. Occasionally repeated aspiration of the pus results in cure. Antiseptics such as gentian violet have proved of doubtful value in the infected pleural cavity.

Abscess of the lung was formerly thought to occur not infrequently following pneumonia. It is probable, however, that in the majority of instances these cases were lung abscesses from the start and due to some agent other than the pneumococcus. I do not recall a case of abscess in which blood culture showed the pneumococcus at any stage of the illness. Regardless of its etiology acute abscess of the lung should be treated conservatively at first. Anything more radical than bronchoscopic drainage should be avoided until the case "cools off." Probably half of these cases recover without surgery.

Pneumococcus meningitis is a comparatively rare complication. We have treated two cases by repeated spinal puncture, drainage, and injection of ethylhydrocupreine; both died. Recoveries have been reported following spinal drainage with the injection of serum. We have had no experience with laminectomy and constant drainage as practiced by Danby and others.